

**REMARKS**

Claim 1 has been amended to incorporate the subject matter of claim 6. Support for this amendment is found at, for example, page 10, lines 19-23 of the present specification.

Claims 6, 10, 11, 16, 19, and 20 are canceled.

Claim 22 is added. Support for this claim may be found at, for example, page 10, lines 19-23; Example 1-1 in Table 1 on page 32; and Example 2-1 in Table 4 on page 33 of the present specification.

Upon entry of the above Amendment, which is respectfully requested, claims 1, 4-5, 7, 14-15 and 21-22 will be pending in the present application.

On page 4 of the Office Action, claims 1, 4-7, 10, 11, 14-16, 19 and 20 are provisionally rejected on the ground of obviousness-type double patenting as allegedly being unpatentable over claims 1-4, 8-10, 14 and 18-22 of U.S. copending Application No. 11/088,794 ("the '794 Application"), in view of "Kakuchi" (JP 2003-252904).

The Examiner is kindly requested to hold this provisional rejection in abeyance until it is the last rejection in this application or the '794 Application.

On page 6 of the Office Action, claims 1, 4, 5, 7, 14 and 15 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by "Kakuchi" (JP 2003-252904).

The Examiner cites Kakuchi as disclosing a method for manufacturing multi-branched polysaccharides which are obtained by polymerization in the presence of a cation or anion initiator and an anhydrosugar, wherein the anhydrosugars can be those listed in present claim 1. Further, the Examiner cites Kakuchi as teaching that the multi-branched polysaccharides are useful as a thickener in a biocompatible gel or a medically-based material, and that the hydroxyl groups of the anhydrosugar may be substituted with OR wherein R is a hydrogen atom or a

hydrocarbon having 1 to 30 carbon atoms, the degree of branching of the multi-branching polysaccharide is between 0.05 to 1.00, and the water-soluble multi-branching polysaccharide can be synthesized in high reusability in large quantities to enable their use as a functional material.

The Examiner acknowledges that Kakuchi does not explicitly teach that the polysaccharide is used in an external preparation for the skin or as a cosmetic; however, the Examiner asserts that the recitations of "an external preparation for the skin" and "cosmetic" are considered to be an "intended use" of the composition such that they are not given patentable weight.

Applicants respectfully submit that present claim 1 and claims dependent thereon are not anticipated by Kakuchi, because Kakuchi does not disclose all of the recitations of present claim 1. For example, claim 1 has been amended to incorporate the subject matter of claim 6, which was not part of this rejection.

Claims 1, 4-5, 7, and 14-15 depend from claim 1, either directly or indirectly.

Therefore, claim 1 and claims dependent there on are not anticipated by Kakuchi. Reconsideration and withdrawal of the § 102 anticipation rejection based on Kakuchi are respectfully requested.

On page 8 of the Office Action, claims 6, 10, 11, 16 and 19-21 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kakuchi as applied to claims 1, 4, 5, 7, 14 and 15, further in view of "Roulier" (U.S. Patent No. 5,900,241).

The Examiner cites Kakuchi as teaching all of the requirements of these claims, except the Examiner acknowledges that Kakuchi does not teach that the multi-branched polysaccharide is present in the composition in the range from 0.1 to 80%. The Examiner relies on Roulier to

teach expanded solid compositions whose matrix contains an alveolar network made from a natural product or from a derivative of a natural product capable of being expanded, as well as cosmetic and dermatological compositions containing the expanded solid compositions, where the alveolar network formed from a natural product or from a derivative of a natural product capable of being expanded is present in the compositions in a proportion ranging from 25 to 98% by weight relative to the weight of the composition. See col. 5, lines 35-40 of Roulier.

Therefore, the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Kakuchi concerning a method of manufacturing multi-branched polysaccharides with the teachings of Roulier regarding expanded solid compositions whose matrix contains an alveolar network made from a natural product or from a derivative of a natural product, because multi-branched polysaccharides are useful as a thickener in a biocompatible gel or a medically-based material, and further Kakuchi teaches that the multi-branched polysaccharides are more advantageous over natural branching polysaccharides, such as amylopectin, because the molecular weight and degree of branching of the disclosed multi-branched polysaccharides can be controlled and produced in high reproducibility in large quantities such that they would more likely yield reproducible properties for a cosmetic composition.

Applicants respectfully traverse for at least the following reasons.

The Examiner's motivation for combining the cited references appears to be that a product containing amylose or amylopectin can be used interchangeably in external preparations for skin or make-up formulations.

However, amylose is a linear polysaccharide having completely different properties from those of a multi-branched polysaccharide as discussed below, regarding the § 103 rejection based

on Kakuchi in view of Dederen: i.e. amylose is classified under a different category from a multi-branched polysaccharide.

Though amylopectin is categorized as a multi-branched polysaccharide, amylopectin is water-insoluble and it is known that amylopectin is a substance which is used in external preparations for skin or make-up formulations only in a special case. The fact that a substance is water-insoluble means that the substance becomes mere precipitation (residue) even if the substance is used in general external preparations for skin. Therefore, the disclosure of Roulier relating to a solid composition and the usage thereof in either of external preparations for skin or make-up formulations is quite limited. Moreover, the solid composition of Roulier cannot be used in make-up formulations in the form as it is. Thus, an operation is required to impart a water affinity in the solid compositions of Roulier before they can be used in make-up formulations.

Accordingly, the Examiner's understanding that Roulier teaches a composition made from a natural product or a derivative thereof, which is capable of being expanded for use in cosmetic and dermatological compositions is different from that of a person of ordinary skill in the art. That is, a person of ordinary skill in the art would not be motivated to employ the multi-branched polysaccharide of Kakuchi in place of amylopectin to be used for cosmetic and dermatological compositions.

In addition, the present disclosure shows that the presently claimed product can have a composition with such versatility that the composition can be used in most forms for dermatological preparations, such as lotion and cream. This result could not have been rendered obvious by combining the teachings of Kakuchi and Roulier.

Therefore, Applicants respectfully submit that the presently claimed invention is non-obvious over Kakuchi and Roulier. Reconsideration and withdrawal of the § 103 obviousness rejection are respectfully requested.

On page 11 of the Office Action, claims 1, 4-7, 10, 11, 14-16 and 19-21 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Kakuchi in view of "Dederen" (U.S. Patent Application Publication No. 2002/0065328), for reasons of record.

In the Response to Arguments section, the Examiner acknowledges Applicants' argument that multi-branched polysaccharides are completely different from linear polysaccharides in terms of structure and physical properties, and are not used in a field where linear polysaccharides are applied. However, the Examiner asserts that Roulier (apparently being used by the Examiner as evidence to support his point) teaches that the use of amylose (a linear polysaccharide) and/or amylopectin (a multi-branched polysaccharide) in a cosmetic or dermatological application shows that linear and multi-branched polysaccharides have been used in the same field of endeavor.

Further, the Examiner acknowledges Applicants' argument that multi-branched polysaccharides greatly differ from linear polysaccharides in that multi-branched polysaccharides do not increase the viscosity of a cosmetic composition even if they are added in a large amount. In this regard, the Examiner is confused as to why Applicants have previously argued that the difference in viscosity between linear polysaccharides and multi-branched polysaccharides would not have motivated one to substitute the polysaccharides of Dederen with the multi-branched polysaccharides taught by Kakuchi. The Examiner asserts that based on Applicants' statement, the difference in viscosity between linear and multi-branched

polysaccharides would be of no concern to an ordinary skilled artisan. Therefore, the Examiner maintains the rejection.

Applicants respectfully traverse for at least the following reasons.

**(1) Applicants submit that multi-branched polysaccharides are completely different from linear polysaccharides in terms of structure and physical properties, and are not used in a field where linear polysaccharides are applied.**

The Examiner seems to think that there is not much of a structural difference between multi-branched polysaccharides and linear polysaccharides. Specifically, the Examiner may interpret the polysaccharide which has a number of branches from the main chain of the linear polysaccharide as being a “many-branched” polysaccharide (shown as a “many branched linear” polysaccharide in the schematic view below). The term “multi-branched polysaccharide” in the presently claimed invention is intended as a polysaccharide, wherein multiple branching arises within branches. Please see the schematic below for a visual comparison of a “many branched linear” to a “multi-branched polysaccharide.” This concept completely differs from the conventional way of making sugar chains from natural polysaccharide by extraction and the like. Though the same term “sugar chain” is incidentally used, the compound of the presently claimed invention is classified under a completely different category both from the academic and patent viewpoints.

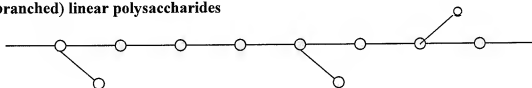
As an analogy for the relation of multi-branched polysaccharides and linear polysaccharides, consider the difference between conventional polyethylene and polyethylene obtained by using metallocene. Though both are described as “polyethylene”, the two have completely different physical properties from each other and a clear distinction is made between the two in industrial use, and the two are not easily interchanged with each other.

Consequently, if a person of ordinary skill in the art is very familiar with polysaccharides conventionally used in cosmetics (i.e. linear polysaccharides), he or she would not have considered “multi-branched” polysaccharides to be obvious.

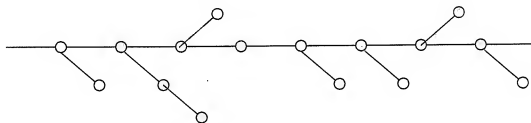
**(non-branched) linear polysaccharides**



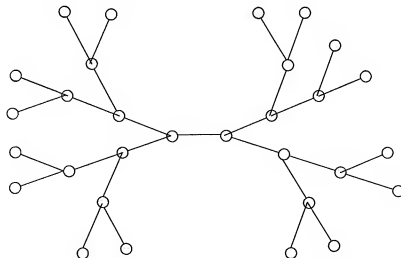
**(a little branched) linear polysaccharides**



**(many branched) linear polysaccharides**



**multi-branched polysaccharides**



**(2) Applicants submit that the Office Action seems to asserts that it is typical to increase the viscosity in preparing cosmetics, but Applicants submit that such is not the case.**

Applicants' argument in response to the previous Final Office Action of March 30, 2009, was that the linear polysaccharides comparable to the multi-branched polysaccharides in molecular weight have a viscosity which is one digit (i.e., one magnitude) larger than that of the multi-branched polysaccharides, which is critical in cosmetic formulations, but it was regarded as not being persuasive. See Response filed on June 30, 2009, which is incorporated herein by reference.

Behind the rejection lies the Examiner's position that other thickening agents (other than polysaccharides), such as polyethylene glycol and other synthetic polymer materials, are used to alter the viscosity of cosmetics. However, Applicants respectfully submit that the Examiner has a mistaken notion in this respect for preparing cosmetics formulations.

Generally, when formulations are prepared using polysaccharides, the viscosity rapidly increases depending on the concentration. If one tries to make polysaccharides exert superior effects except for viscosity and to add polysaccharides to achieve a desired concentration, it is not possible to add polysaccharides in an amount exceeding a limit, because too high of a viscosity makes it impossible to process the formulation into a product. That is, based on the knowledge in the art, one would not be motivated to make formulations comprising a large amount of polysaccharides. Though it might be possible to increase the viscosity by the method as the Examiner stated in the formulation having a low viscosity, formulations comprising polysaccharides would not yield expected results in general.



Accordingly, the presently claimed invention, which enables making formulations (blending) “polysaccharides having low viscosity”, such as multi-branched polysaccharides in cosmetics, is an unexpectedly superior technique from the vantage point of one skilled in the art. On the basis of this concept, Applicants submitted a supporting reference in the previous response (“Sato,” Response of June 30, 2009), proving that the multi-branched polysaccharides have low viscosity and explaining that the multi-branched polysaccharides exhibit the properties of Newtonian fluid, which is an unusual feature.

**(3) Applicants submit that a multi-branched polysaccharide greatly differs from a linear polysaccharide in that it does not increase the viscosity of a cosmetic even if it is added in a large amount.**

The Examiner states that Applicants’ argument that the difference in viscosity between linear polysaccharides and multi-branched polysaccharides would not motivate one to replace the linear polysaccharides of Dederen with the multi-branched polysaccharides taught by Kakuchi is unclear at page 14 of the Office Action.

Applicants respectfully traverse the Examiner’s position by submitting supplemental data that show that a remarkable difference in the viscosity occurs between multi-branched polysaccharides and linear polysaccharides.

Mr. Motoaki Kamachi, the first named invention of the present application, submits a Declaration herewith. As will be appreciated from the Declaration, the viscosity of the multi-branched polysaccharide shows little change when the concentration is changed from 0.5 mass% to 10 mass% (10 mass% is an unusually high concentration for ordinary polysaccharides). In contrast, as a result of the measurement of the viscosity of the preparations using five kinds of

linear polysaccharides used for dermatological preparations (especially for cosmetics), all of the five preparations showed a viscosity much higher than that of the multi-branched polysaccharide. That is, the multi-branched polysaccharide of Kakuchi has completely different physical properties from those of the conventional natural polysaccharides. Therefore, it is clear that a person of ordinary skill in the art would not be motivated to employ the multi-branched polysaccharide of Kakuchi in place of the polysaccharide of Dederen.

Further, the Declaration evidence demonstrates that the present invention provides unexpectedly superior results.

Applicants respectfully submit that the present claimed invention is non-obvious over Kakuchi in view of Dederen. Reconsideration and withdrawal of the § 103 obviousness rejection are respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: April 13, 2010

Respectfully submitted,



Bruce E. Kramer  
Registration No. 33,725